

2009 Prairie View A&M University Research Plan of Work

Status: Accepted
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I. Plan Overview

1. Brief Summary about Plan Of Work

The Cooperative Agricultural Research Center (CARC) is the organizational unit within the college of Agriculture and Human Sciences at Prairie View A&M University, originally established as an agricultural experimental substation in 1947, with assigned administrative and managerial responsibilities research in the food and agricultural sciences. The Center serves to coordinate research activities in three major areas: Animal Systems, Food Systems, and Plant and Environmental Systems. The Center is committed to the land-grant mission, the mission of the University, the Texas Agricultural Experiment Station and the USDA. This Plan of Work supports the broad goals of USDA, and the CSREES in particular, of ensuring the competitiveness of the U.S. Agricultural System.

Mission:

The mission of the Cooperative Agricultural Research Center is:

To conduct relevant, quality, focused, basic and applied research in the areas of agriculture, life and human sciences.

The vision of the Cooperative Agricultural Research Center is to be a premier research agency providing scientific solutions to problems facing our dynamic society.

The philosophy: Together We Make a Difference

BACKGROUND

The AREERA of 1998 amended the Hatch Act of 1887, the Smith-Lever Act of 1914, and sections 1444 and 1445 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA) to require plans of work to be received and approved by CSREES prior to the distribution of funding authorized under these Acts. The collection of information includes 3 parts: the submission of a 5-year plan of work every five years; the submission of an annual update of the 5-year plan of work, if applicable; and, the submission of an annual report of accomplishments and results.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	0.0	54.0
2010	0.0	0.0	0.0	56.0
2011	0.0	0.0	0.0	60.0
2012	0.0	0.0	0.0	60.5
2013	0.0	0.0	0.0	60.5

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel
- Combined External and Internal University Panel
- Combined External and Internal University External Non-University Panel

2. Brief Explanation

1) Merit Review

All funded projects, either Evans-Allen, Experiment Station (Hatch), or otherwise, undergo a merit review process. Each scientist (or faculty) when submitting a proposal for funding support, must submit the name of at least two qualified individuals to provide technical review of the project. Additionally, the Research Director selects individuals to serve as members of an internal

review panel in consultation with the University's Vice President for Research and Development. At minimum, three individuals review and evaluate each proposed project prior to approval for external submittal and /or internal fund allocation.

2) Scientific Peer Review

All project reports including CRIS must show evidence of external review. Written comments should be included with final proposals for campus routing. Routing proposals through quality control check points (Research Director → Dean of the College → Vice President for Research) are designed to ensure that proposals meet RFP guidelines as well as meet scientific merit qualifications. All proposals are quality checked by our on campus Office of Sponsored Programs

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

The designated research programmatic focus areas target research issues that have been identified through strategic planning, including the stakeholder input process. Project activities will engage a continuous review/feedback process of evaluation with periodic updates.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

The overall goal of the Center is to support the mission of the University which is to serve a diverse ethnic and socioeconomic population, with special emphasis on the underserved. While the University's service area extends throughout Texas, the nation and the world, its primary target area is the Texas Gulf Coast Region, with primary emphasis on the Houston Northwest Corridor. The area is heavily populated by individuals of diverse ethnic and socioeconomic backgrounds. The Center also works closely with the Cooperative Extension Program in programmatic planning/outreach activities.

3. How will the planned programs describe the expected outcomes and impacts?

The three (3) focused programs - Animal Systems, Food Systems and Plant and Environmental Systems - address issues that have measurable outcomes and impacts. Each program, with subsequent projects, all are hypothesis-driven which means that the results are measurable. Each project is required to demonstrate impact on an ongoing basis.

4. How will the planned programs result in improved program effectiveness and/or efficiency?

Planned programs will result in improved effectiveness for several reasons: one - all projects are developed by teams with individuals having diverse backgrounds and interests. Secondly, the process of continuous feedback/evaluation ensures effectiveness, efficiency and relevancy of the project.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Survey of traditional stakeholder groups
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder individuals
- Survey of traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder groups
- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to selected individuals from general public

Brief explanation.

The Cooperative Agricultural Research Center uses several input processes to obtain stakeholder input for purposes of designing research. This includes; external advisory committees, joint field days, targeted workshops, seminars, short courses, internal committees, as well as ESCOP and USDA priorities.

2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Surveys
- Open Listening Sessions
- Other (commodity organizations)
- Use Internal Focus Groups
- Use Advisory Committees

Brief explanation.

The above listed organizations provide invaluable input into the stakeholder process. The Center also maintains active contact list and engage stakeholder on a regular and ongoing basis.

2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder groups
- Meeting with the general public (open meeting advertised to all)

Brief explanation

Maintain close ties with Extension, USDA, and related personnel; ongoing work relations with local interest groups.

3. A statement of how the input will be considered

- In the Budget Process

Brief explanation.

Information collected through the stakeholder process maintains a database and is reviewed on a continuous basis by discussion groups and/or scientists in developing project activities.

V. Planned Program Table of Content

S. NO.	PROGRAM NAME
1	Food Systems
2	Animal Systems
3	Plant and Environmental Systems

V(A). Planned Program (Summary)

Program #1

1. Name of the Planned Program

Food Systems

2. Brief summary about Planned Program

The Food System Program (FSP) supports the land grant-mission and goals of USDA through addressing issues of regional and national importance of enhancing nutrition, food safety/quality and the related impacts on the quality of life. Critical issues facing the underserved population locally, nationally and globally involving the incidences of nutritional related illnesses and diseases, such as diabetes and obesity, and the increase in foodborne illnesses.

The goals of the FSP are:

- 1. To increase the body of knowledge in the understanding of nutrients and mechanisms implicated in illnesses and diseases.
- 2. To increase the body of knowledge in the areas of quality and safety of meat, milk, and value-added products.

To accomplish these goals research will be conducted to develop methods for enhancing the quality of food and food products, examine strategies for mitigating the transmission of natural food borne pathogens, examine methods for the reduction of natural and introduced toxicants in foods and feed, examine nutrient quality enhancement of food and food products, examine mechanisms involved in nutrient utilization and diseases, evaluate strategies for minimizing the transfer of microbial pathogens during food handling, evaluate strategies for translating nutrition knowledge into better food selection.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies				10%
502	New and Improved Food Products				10%
503	Quality Maintenance in Storing and Marketing Food Products				10%
701	Nutrient Composition of Food				10%
702	Requirements and Function of Nutrients and Other Food Component				10%
703	Nutrition Education and Behavior				20%
711	Ensure Food Products Free of Harmful Chemicals, Including Residue				20%
712	Protect Food from Contamination by Pathogenic Microorganisms, Pa				10%
	Total				100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The Food System Program (FSP) supports the land grant-mission and goals of USDA through addressing issues of regional and national importance of enhancing nutrition, food safety/quality and the related impacts on the quality of life. Critical issues facing the underserved population locally, nationally and globally involving the incidences of nutritional related illnesses and diseases, such as diabetes and obesity, and the increase in foodborne illnesses.

These issues have been defined with input from discussion groups at the University including researchers, extension program specialists, staff, students and from reviews of current and related literature, including the strategic plans of USDA agencies (eg. ARS, CSREES) the National Institute of Health (NIH), the Centers for Disease Control (CDC) and the Texas Department of Health and Human Services. Our Cooperative Extension Program has regular future forums which helps in determining issues related to our clientele. The most recent data presented by the CDC indicates that 76 million cases of food borne illnesses occur each year in the United States with exhibited mild symptoms. However, some 325,000 foodborne illness cases require hospitalization and another 5,000 foodborne illnesses result in deaths. The outbreaks of food borne illnesses varies in method of spreading but a significant number of incidents are widespread affecting individuals in various places with the onset of symptoms occurring over a several week time span. Based upon CDC reports and unpublished data here at the Center, in addition to technological advances in detection and control of pathogens, education of food handlers and the utilization of food safety practices may be the most effective manner to reduce the risk of increasing the pathogen population. Furthermore, the prevalence rates (> 20%) of obesity is high in over half of the US. Although obesity affects the population at large, the populations serviced by our institution is disproportionately impacted. The viability, productivity and well being of society is at risk with the projected numbers of individuals that will be impacted by obesity and associated chronic diseases in the future.

Projects within the FSP will address the issues of nutritional related illnesses and the high incidence of food borne illnesses

through research activities focusing on mechanisms and biomarkers of nutritionally and foodborne illnesses and disease, improving the organoleptic and nutritional quality and safety of food.

Existing research data indicate that much of the nutritional related illnesses are due to inappropriate nutrient-energy intake as well as inadequate physical activity. Furthermore the translation of research knowledge into effective programs for reducing these problems is not fully understood. Increasing the nutritional value of foods (whole, enriched, fortified or enhanced) through value added efforts and improving the organoleptic characteristics of foods will have a major role in consumer acceptance and food choices to reduce the illnesses associated with poor diet and inadequate nutrient intake.

2. Scope of the Program

- In-State Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

The FSP recognizes that nutrition and food are at the very heart of our existence and without it life would end. The quality of life and well-being of our society is impacted by a variety of factors including inappropriate nutrient-energy intake and exposure to food borne pathogens. Both inappropriate nutrient-energy intake and exposure to food borne pathogens are issues that must be addressed to reduce the incidence of illnesses and diseases in the population.

Research that will examine the quality and the nutritional value of meats, milk and value-added products is significant in food manufacturing and processing technology. Additionally, research activities will investigate the relationship between and the mechanisms of food/food component and nutritionally related diseases; and identify evaluation tools, methods and instrumentation for measuring the relationship between foods and/or food components nutritionally related diseases and illnesses. These activities will help to reduce the incidence of these types of illnesses and diseases.

The acceptance of any food or food product is not only determined by its nutritional and organoleptic qualities but also by its safety. Food quality and safety are the most important factors for consumer's acceptance and consumption and are issues that are federally regulated. The movement of pesticides, herbicides and antibiotic residues throughout the food chain is of foremost importance. Research that will examine the presence of these hazards along the food chain from the farm to the table will provide knowledge for the withdrawal process, processing methods and alternatives to traditional methods for the preservation and increase in production of meat and milk products.

2. Ultimate goal(s) of this Program

The Food System Program goals are:

1. To increase the body of knowledge in the understanding of nutrients and mechanisms implicated in illnesses and diseases.
2. To increase the body of knowledge in the area of quality and safety of meat, milk, and value-added products.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	0.0	16.2
2010	0.0	0.0	0.0	16.8
2011	0.0	0.0	0.0	17.0
2012	0.0	0.0	0.0	18.0
2013	0.0	0.0	0.0	18.0

V(F). Planned Program (Activity)**1. Activity for the Program**

Conduct research activities centered around:

- Developing methods for enhancing the quality of food and food products.
- Examining strategies for mitigating the transmission of natural food borne pathogens.
- Examining methods for the reduction of natural and introduced toxicants (eg. antibiotics in milk and Salmonella) in foods and feed.
- Examining nutrient quality enhancement of food and food products.
- Examining mechanisms involved in nutrient utilization and diseases.
- Evaluating strategies for minimizing the transfer of microbial pathogens during food handling.
- Evaluating strategies for translating nutrition knowledge into better food selection.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Workshop ● Demonstrations ● Group Discussion 	<ul style="list-style-type: none"> ● Other 2 (Publications) ● Web sites ● Newsletters ● Other 1 (Information Briefs)

3. Description of targeted audience

The primarily targeted audience are the underserved population living in the surrounding counties and the Northwest Houston Corridor. This population is dominated by Hispanics and African-Americans. Also, this area has been designated by the State of Texas as Prairie View A&M University's service area.

V(G). Planned Program (Outputs)**1. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	275	825	240	330
2010	305	900	300	400
2011	400	1000	400	500
2012	400	1000	400	500
2013	400	1000	400	500

2. (Standard Research Target) Number of Patent Applications Submitted**Expected Patent Applications**

2009 :1

2010 :1

2011 : 2

2012 :1

2013 : 1

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	8	0	0
2010	10	0	0
2011	12	0	0
2012	14	0	0
2013	14	0	0

V(H). State Defined Outputs

1. Output Target

- Peer review publications. -External funding. -Workshops. -Presentations. -Graduate and undergraduate matriculation.

2009 :8 2010 :10 2011 :12 2012 :14 2013 :14

V(I). State Defined Outcome

O. No	Outcome Name
1	<p>-Commercialization of methods/technologies for improving the quality, safety and use of food and food products for the reduction of obesity, food borne illnesses and other nutritionally related diseases.</p> <p>-Nutrition/exercise intervention programs leading to a reduction in obesity. -Increase in the dissemination and use of research based information into newsletters and incorporation into extension and other programs leading to a reduction in nutrition related and food borne diseases and illnesses.</p>

Outcome #1**1. Outcome Target**

-Commercialization of methods/technologies for improving the quality, safety and use of food and food products for the reduction of obesity, food borne illnesses and other nutritionally related diseases. -Nutrition/exercise intervention programs leading to a reduction in obesity. -Increase in the dissemination and use of research based information into newsletters and incorporation into extension and other programs leading to a reduction in nutrition related and food borne diseases and illnesses.

2. Outcome Type : Change in Condition Outcome Measure

2009 :0

2010 : 0

2011 : 0

2012 :3

2013 : 0

3. Associated Institute Type(s)

- 1890 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

V(J). Planned Program (External Factors)**1. External Factors which may affect Outcomes**

- Appropriations changes
- Populations changes (immigration,new cultural groupings,etc.)

Description

External factors which may affect the outcomes of the defined programs include but may not be limited to competing programmatic challenges, population changes with respect to nutritional related illnesses, i.e. obesity, appropriations changes and the partnerships gained or loss.

Partnerships and/or collaborations with the following agencies, organization and industries are crucial in accomplishments of the program's activities and goals

- Cooperative Extension Program at the University.
- Department of Agriculture, Nutrition and Human Ecology at the University.
- Other 1862 and 1890s Land Grant Institutions.
- Texas A&M University and with other Institutions within the System.
- Linkages with Texas Medical Center (Houston, TX), Nanofluence Health Corporation (Northfield, IL), Hibiscus Plantation (Waller, TX), and Alltech Biotechnology Corporation (Lexington, KY).

As new challenges arises and are of immediate urgency, as a part of the food system program commitment to enhancing the quality of life of the underserved populations, the food systems program will address these issues. The defined program will not change unless effective programs have been implemented to alter the need as addressed.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- Retrospective (post program)
- During (during program)

Description

The food system program activities will be evaluated during and after program initiation. The progress of each activity will be measured annually as a part of the CARC fiscal year annual accomplishment and plan of work. The scientist leading each activity will have to report specifically on the progress that has been made on that activity. The progress report of the activity must include finished task, undone task and address problems and solutions with associated activity and a recommendation for continual support of activity.

The overall program will be evaluated based upon the stated outputs and outcomes. The use and input of extension personnel, industrial and other partners will help to effectively evaluate and accomplish the activities and goals of the program. The evaluation process will review whether the facilities and other resources presently at the university are adequate to accomplish the goals.

2. Data Collection Methods

- On-Site
- Portfolio Reviews
- Unstructured
- Structured
- Sampling
- Journals
- Tests
- Observation

Description

Publications, presentations, abstracts, annual reports, newsletters, workshops, field days, seminars, student thesis reports, bulletins.

V(A). Planned Program (Summary)

Program #2

1. Name of the Planned Program

Animal Systems

2. Brief summary about Planned Program

Key research areas are designed to improve scientific understanding of physiological mechanisms affecting reproduction, growth and performance of farm animals. These undertakings are crucial for development of efficient production practices and promotion of a healthy and competitive livestock industry in Texas. Application of this science-based information allows for the development of humane and cost-effective production practices that promote animal well-being and minimize stress. It is also necessary to produce animals that provide consumers with the quality meat, milk and by-products they desire at an affordable cost. High production efficiency and growth are critical elements for expanding local and national markets and effectively competing in global markets.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals				10%
302	Nutrient Utilization in Animals				10%
303	Genetic Improvement of Animals				10%
304	Animal Genome				20%
305	Animal Physiological Processes				10%
307	Animal Management Systems				20%
308	Improved Animal Products (Before Harvest)				10%
313	Internal Parasites in Animals				10%
	Total				100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The science and landscape of agriculture has changed in recent years necessitating the need to implement management practices that accommodate needs that are concomitant with diminishing agricultural lands. In addition, there are increasing demands being placed on the traditional crop sources (i.e. corn, soybeans, wheat, etc.) used in foods, feed, fiber and fuel. More and more of our base feedstock are being channeled into fuels and plastics production, which greatly impacts livestock production. Greater attention will have to be given to alternative production schemes, in particular, more forage-based intensive systems.

2. Scope of the Program

- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Reproductive efficiency limits profitability of animal production systems. Research will address issues that affect lifetime reproductive efficiency in grazing ruminants. Focus areas include projects that identify factors that influence uterine health and embryonic and fetal survival. Decreased early embryonic losses will increase farm animal production efficiency and wellbeing.

Biotechnology allows incorporation of molecular data into genetic evaluations. Assisted reproduction technologies, marker assisted selection and germplasm conservation provide the tools to enhance genetic selection of selected phenotypes. Identification of molecular markers for desirable traits, including disease and stress resistance, will facilitate recommendations for

interventions that maintain optimal herd health and profitability in the Texas Gulf Coast Region.

Enhanced public understanding of the concepts and applications of animal well-being and the physiological basis for animal growth, reproduction, and cost effective production can be achieved through field days, workshops and other educational programs.

2. Ultimate goal(s) of this Program

The overall goal of the Animal Systems focus area is to increase the efficiency of producing livestock with an emphasis on grazing ruminants (beef cattle and goats). This will be accomplished through research activities that generate scientific and technical information on animal production systems that are applicable locally, nationally and internationally.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	0.0	21.6
2010	0.0	0.0	0.0	22.4
2011	0.0	0.0	0.0	24.0
2012	0.0	0.0	0.0	24.2
2013	0.0	0.0	0.0	24.7

V(F). Planned Program (Activity)

1. Activity for the Program

Applied and basic scientific research goals are as follows:

1. Determine the efficiency of farm animal production systems through a combination of best management practices and genetic enhancement.
 - a. Analyze the usefulness of various forage based production systems and management practices for the Texas Gulf Coast.
 - . Maximize livestock productivity on small acreage using forage based nutrient systems for livestock production.
 2. Develop methods to improve reproductive efficiency of farm animals and improved conditions for growth and well-being.
 - a. Define endocrine and porcine mechanisms which regulate uterine receptivity and support conceptus growth, endometrial attachment and placentation.
 - . Identify proteins that carry the carbohydrate recognition molecules on the endometrium that promote stable cell-cell interactions and facilitate placentation.
 - c. Investigate factors involved in sperm attachment within the female reproductive tract and their relationship to fertility levels.
 - d. Utilize functional genomic approaches to understand the physiological mechanisms that influence reproduction, growth and efficiency of food producing animals.
 - e. Identify molecular markers for desirable traits, including disease and stress resistance.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Demonstrations ● Education Class ● Workshop ● One-on-One Intervention ● Group Discussion 	<ul style="list-style-type: none"> ● Newsletters ● Other 2 (Publications) ● Web sites ● Other 1 (Reports/Information Briefs)

3. Description of targeted audience

While the University's service area extend throughout Texas and the world, the University's target service area includes the

Texas Gulf Coast Region. This includes the surrounding counties and includes the rapidly growing residential and commercial area known as the Northwest Houston Corridor as noted in the original Texas Plan. Therefore, problems associated with agricultural production systems, including those that exist at urban-agricultural interfaces and impact stakeholders will be addressed.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	550	275	40	330
2010	600	300	40	360
2011	650	325	40	390
2012	700	350	40	420
2013	700	350	40	420

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 :0 2010 :1 2011 :2 2012 :2 2013 :2

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	12	0	0
2010	14	0	0
2011	16	0	0
2012	18	0	0
2013	18	0	0

V(H). State Defined Outputs

1. Output Target

- Increase in peer reviewed publications. Increase in competitive grants received by Faculty and Staff in the Animal Systems Group. Increase in graduate student enrollment and matriculation in the Animal Science Program. We anticipate a 5% increase over the previous 5 year base line in each of these categories.

2009 :12 2010 :14 2011 :16 2012 :18 2013 :18

V(I). State Defined Outcome

O. No	Outcome Name
1	<p>Improved reproduction efficiency and improved conditions for optimal growth and well-being of farm animals.</p> <p>Availability of resources (demonstration/test plots, hay and pastures, co-grazing site, etc.) for use by research scientists, graduate students and Extension personnel for research and teaching purposes.</p> <p>Availability of demonstrations using latest technology for research, demonstrations and teaching purposes for herd/farm record systems, animal identification, etc. applicable to small scale producers. A greater public understanding of the principles of animal behavior, animal responses to their environment, and the biology of reproduction and growth. Increased farm income and profitability by understanding production economics, profit margins and clarifying marketing channels and timing. A more competitive livestock industry in Texas.</p>

Outcome #1**1. Outcome Target**

Improved reproduction efficiency and improved conditions for optimal growth and well-being of farm animals. Availability of resources (demonstration/test plots, hay and pastures, co-grazing site, etc.) for use by research scientists, graduate students and Extension personnel for research and teaching purposes. Availability of demonstrations using latest technology for research, demonstrations and teaching purposes for herd/farm record systems, animal identification, etc. applicable to small scale producers. A greater public understanding of the principles of animal behavior, animal responses to their environment, and the biology of reproduction and growth. Increased farm income and profitability by understanding production economics, profit margins and clarifying marketing channels and timing. A more competitive livestock industry in Texas.

2. Outcome Type : Change in Action Outcome Measure

2009 :0

2010 : 0

2011 : 0

2012 :0

2013 : 0

3. Associated Institute Type(s)

- 1890 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 313 - Internal Parasites in Animals

V(J). Planned Program (External Factors)**1. External Factors which may affect Outcomes**

- Natural Disasters (drought,weather extremes,etc.)
- Public Policy changes
- Appropriations changes
- Economy
- Populations changes (immigration,new cultural groupings,etc.)
- Competing Public priorities

Description

Meaningful program content is dependent on an awareness of industry and producer needs and trends over the short and long term. These needs are determined by maintaining contacts with industry, producers, consumers, and state and federal organizations. Program inputs/design, implementation and output assessment will be monitored to allow for future directions. This requires a close working relationship between extension, research and academics within and external to our own university structure as well as with local, state and federal agencies. Measurable outcomes of program inputs will be monitored and evaluated continuously in order to determine effectiveness in accomplishing program goals and objectives. Groups involved in program development, implementation and assessment include:

The Cooperative Extension Program at PVAMU
 The Department of Agriculture, Nutrition and Human Ecology at PVAMU
 1862 and 1890 Land Grant Institutions
 Texas Agrilife Research
 Texas A&M University

Texas A&M University System Institutions
Texas Medical Center in Houston
Agribusiness Linkages
The Texas Department of Agriculture

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Retrospective (post program)

Description

Formative evaluations will be conducted yearly as part of our yearly plan of work update/evaluation. A summative evaluation will be conducted at the end of the 5 year plan of work. Progress at achieving the goals will be evaluated annually taking into consideration specific goals, measurable objectives, and quantifiable outcomes stated in the yearly plan of work.

2. Data Collection Methods

- Structured
- Unstructured
- On-Site
- Journals
- Other (stakeholder input surveys)
- Portfolio Reviews
- Tests
- Sampling
- Observation

Description

Publications, presentations, abstracts, annual reports, newsletters, workshops and field days, conferences, seminars, student graduation rates, external funding.

V(A). Planned Program (Summary)

Program #3

1. Name of the Planned Program

Plant and Environmental Systems

2. Brief summary about Planned Program

The Plant and Environmental Systems Research focus areas has numerous projects that have been designed based on more than 20 years of research experience in the specific fields of study. Project work has been pursued on an individual as well as a collaborative basis during this time period; however the group will enter a new phase by developing one major project in which all team members contribute some portion of the work based upon their expertise, while maintaining the previous track record of focused research.

The major projects to be pursued by the group will focus on a very important and vital portion of the regional environment, the Texas Gulf Coast Prairie Wetland Ecosystems. The project activities will be focused on the following three main components, with the associated subtopics: 1) Soil and Water Monitoring – a) Soil Descriptions; b) Redoximorphic Features; c) Seasonally Wet Soils; d) Wetland Soils; e) Wetland Hydrology; f) Wetland Delineation; g) Water Table Monitoring; h) Water Storage Monitoring; and i) Rainfall Variability – Microsite Level; 2) Biogeochemical Processes – a) Petroleum Remediation; b) Toxic Chemical Remediation; c) Microbial Control; d) Fe and Mn Dynamics; e) Plant-Soil-Microbial Interactions; and f) Biodegradable Polymer Systems; and 3) Alternative Cropping Systems and Biomass Production – a) Bioenergy Crops; b) Environmental Biotechnology; c) Cellulose and Fatty Acid Enhancement; d) Biomass Genomics; e) Wetland Plants; f) Environmental Biochemistry of Prairie Grasses; and g) Plant Growth-Soil Microbial Interactions.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships				10%
103	Management of Saline and Sodic Soils and Salinity				10%
104	Protect Soil from Harmful Effects of Natural Elements				10%
112	Watershed Protection and Management				10%
131	Alternative Uses of Land				10%
132	Weather and Climate				10%
133	Pollution Prevention and Mitigation				10%
201	Plant Genome, Genetics, and Genetic Mechanisms				10%
202	Plant Genetic Resources				10%
206	Basic Plant Biology				10%
	Total				100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Agricultural, environmental and energy resources within the state of Texas and the U.S.A. must be protected in order to maintain our quality of life as well as to provide stable economic growth. Identification of growth areas for continued collaborative research will strengthen our partnerships on all levels, including: university (departmental), regional (other universities and state agencies) and national (federal agencies).

2. Scope of the Program

- In-State Research
- Integrated Research and Extension
- Multistate Research
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)**1. Assumptions made for the Program**

1. Plant systems research is valued highly by our stakeholders.
2. Environmental systems components are beneficial to communities.
3. Applied and supporting basic research serve to bolster our fundamental knowledge within the food and agricultural sciences.

2. Ultimate goal(s) of this Program

1. To develop and maintain a premier research program focused on applied and basic research in plant and environmental systems studies.
2. To promote a central core research concept with associated integrated research, teaching, and extension components.
3. To serve our local and regional communities by providing plant and environmental systems knowledge which guides the growth of the urban fringe.

V(E). Planned Program (Inputs)**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	0.0	16.2
2010	0.0	0.0	0.0	16.8
2011	0.0	0.0	0.0	17.0
2012	0.0	0.0	0.0	18.0
2013	0.0	0.0	0.0	18.0

V(F). Planned Program (Activity)**1. Activity for the Program**

1. Newsletters.
2. Publications (journals, articles).
3. Abstracts.
4. Presentations (scientific conferences, workshops, seminars).
5. digital media (video, MP3 JPEG, GIFF) of project work.
6. Audio (recordings, radio, TV excerpts).

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Group Discussion ● One-on-One Intervention ● Workshop ● Demonstrations ● Education Class 	<ul style="list-style-type: none"> ● Other 1 (Information Briefs) ● TV Media Programs ● Newsletters ● Web sites ● Public Service Announcement

3. Description of targeted audience

One-on-one interaction in field and lab project areas will highlight the research efforts. Extension is the end product of the integrated work within the research, teaching, and extension model.

V(G). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	20	150	40	250
2010	15	150	50	250
2011	15	200	50	300
2012	15	250	50	350
2013	15	250	50	350

2. (Standard Research Target) Number of Patent Applications Submitted**Expected Patent Applications****2009 :1****2010 :1****2011 : 1****2012 :1****2013 : 1****3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	8	0	0
2010	10	0	0
2011	12	0	0
2012	14	0	0
2013	14	0	0

V(H). State Defined Outputs**1. Output Target**

- Increase peer-review publications, presentations, abstracts, and competitive grants. Increase graduate student enrollment and matriculation in the program. We anticipate a 5% increase over the previous 5 year base line in each of these categories.

2009 :8**2010 :10****2011 : 12****2012 :14****2013 :14**

V(I). State Defined Outcome

O. No	Outcome Name
1	-Research results highly valued by stakeholders -Increased recognition of the program -Increased interest in the program by students wishing to matriculate in the program -Enhanced attraction of external funding

Outcome #1**1. Outcome Target**

-Research results highly valued by stakeholders -Increased recognition of the program -Increased interest in the program by students wishing to matriculate in the program -Enhanced attraction of external funding

2. Outcome Type : Change in Condition Outcome Measure

2009 :0

2010 : 0

2011 : 0

2012 :0

2013 : 0

3. Associated Institute Type(s)

- 1890 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 206 - Basic Plant Biology

V(J). Planned Program (External Factors)**1. External Factors which may affect Outcomes**

- Appropriations changes
- Competing Public priorities
- Government Regulations
- Competing Programmatic Challenges
- Economy
- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)

Description

Our regional climatic dynamics can have an extremely adverse effect on our applied systems research. Economic, appropriations, and policy changes will determine our ability to address focus areas. Government regulations will direct our focus as landowners and endusers seek our knowledge to address plant and environmental systems needs.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Retrospective (post program)
- During (during program)

Description

Evaluations of program efforts will occur during the ongoing study phase and will consist of measures that indicate a clear focus on outcomes from the studies.

2. Data Collection Methods

- Portfolio Reviews
- Sampling
- Observation

Description

Methods to address data collection will include sampling of research outcomes based on observation and portfolio reviews. Care will be given to maintain confidentiality within the project framework while allowing outcomes to be clearly recorded based upon level of importance to stakeholders.